



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,923	10/13/2004	Liang Tang	137291XT (GEMS0218PA)	5922
61604	7590	09/22/2006	EXAMINER	
PETER VOGEL GE HEALTHCARE 3000 N. GRANDVIEW BLVD., SN-477 WAUKESHA, WI 53188			ARTMAN, THOMAS R	
			ART UNIT	PAPER NUMBER
			2882	

DATE MAILED: 09/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/711,923

Applicant(s)

TANG, LIANG

Examiner

Thomas R. Artman

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 7 and 9-19 is/are rejected.
- 7) ☒ Claim(s) 5 and 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Claim Objections

Claim 16 is objected to because antecedent basis is lacking for “said plurality of high voltage leads.” It appears that claim 16 should depend from claim 15, and it shall be examined upon these merits. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 6, 7, 9-15, 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Splain877 (US 3,502,877).

Regarding claim 1, Splain877 discloses a cathode circuit for an imaging tube (Fig.3), including:

- a) a plurality of high voltage elements (at least items 13, 16, 124), and
- b) at least one voltage clamping device 130 coupled between the plurality of high voltage elements, and
- c) preventing occurrence of overvoltage transients in the cathode circuit (col.7, lines 43-45 and 51-56).

Art Unit: 2882

With respect to claim 2, the plurality of high voltage elements have a low operating voltage therebetween (all are at the same potential due to high voltage conductor 16).

With respect to claim 6, the voltage clamping device 130 is a resistive jumper.

With respect to claim 9, the voltage clamping device 130 is a voltage clamping device.

Regarding claim 11, Splain877 discloses an imaging tube (Fig.3) including:

- a) a plurality of high voltage elements (12, 15 and 132; 13, 16 and 124), and
- b) at least one voltage clamping device 131; 130 coupled between the plurality of high voltage elements, and
- c) prevent the occurrence of overvoltage transients in the imaging tube (col.7, lines 43-61).

With respect to claim 12, Splain877 further discloses a driving circuit (120, 121) and a cathode 13 coupled to the driving circuit via the plurality of high voltage elements (16, 124).

With respect to claim 13, Splain877 further discloses a driving circuit (120, 121) and a high voltage receptacle (not shown, where the cable 16 attaches to the imaging tube near cathode 13) that is coupled to the driving circuit via the plurality of high voltage elements 16, 124.

With respect to claim 14, Splain877 further discloses that the plurality of high voltage elements exist within the imaging tube housing (cathode 13), the casing (holding circuitry, including diode 124) and the cable assembly (cable 16).

With respect to claim 15, Splain877 further discloses that the plurality of high voltage elements are a plurality of high voltage leads (leads that connect cable 16 to cathode 13 and connect cable 16 to diode 124).

With respect to claims 7 and 17, the voltage clamping device 130 is formed of a resistive material.

With respect to claims 10 and 18, the voltage clamping device 130 performs as an insulator when the voltage potential between the elements is less than a predetermined voltage level (col.7, lines 51-56).

Art Unit: 2882

Claims 1, 3, 6, 9-15, 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Splain067 (US 3,521,067).

Regarding claims 1 and 11, Splain067 discloses a cathode circuit and an imaging tube (Fig.1), including:

- a) a plurality of high voltage devices 10F and 14S, and
- b) at least one voltage clamping device 18 coupled between the plurality of high voltage elements, and
- c) preventing occurrence of overvoltage transients in the cathode circuit (col.3, lines 27-46).

With respect to claim 3, Splain067 further discloses that the clamping device 18 is a varistor.

With respect to claim 6, Splain067 further discloses that the voltage clamping device 18 is a resistive jumper.

With respect to claims 7 and 17, Splain067 further discloses that the voltage clamping device 18 is formed of a resistive material.

With respect to claim 9, Splain067 further discloses that the voltage clamping device 18 is a voltage clamping device or a current clamping device (col.3, lines 43-46).

With respect to claims 10 and 18, Splain067 further discloses that the voltage clamping device 18 performs as an insulator when the voltage potential between the elements is less than a predetermined voltage level (col.3, lines 38-46).

With respect to claim 12, Splain067 further discloses a driving circuit (12 and 14S) and a cathode 10F coupled to the driving circuit via the plurality of high voltage elements (electrical connections between elements).

With respect to claim 13, Splain067 further discloses a driving circuit (12 and 14S) and a high voltage receptacle (not shown, where the cable attaches to the imaging tube near cathode 10F) that is coupled to the driving circuit via the plurality of high voltage elements (electrical connections between elements).

With respect to claim 14, Splain067 further discloses that the plurality of high voltage elements exist within the imaging tube housing (cathode 10F), the casing (circuitry, including 18, 14S) and the cable assembly (electrical connections between elements).

With respect to claim 15, Splain067 further discloses that the plurality of high voltage elements are a plurality of high voltage leads (leads that connect the voltage clamping device to cathode 10F and 14S).

Art Unit: 2882

Claims 1-3, 6, 7 and 9-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Santurtun (US 4,601,051).

Regarding claims 1 and 11, Santurtun discloses an apparatus (Figs.2 and 3B), including:

- a) a plurality of high voltage elements (29, 31), and
- b) at least one voltage clamping device 32 coupled between the plurality of high voltage elements and preventing occurrence of overvoltage transients in a cathode circuit 29 (col.9, lines 28-34).

With respect to claim 2, Santurtun further discloses that the plurality of high voltage elements have a low operating voltage therebetween (all are at the same potential since they are connected at a common node (Fig.2)).

With respect to claim 3, Santurtun further discloses that the clamping device is a varistor (col.9, lines 28-34).

With respect to claim 6, Santurtun further discloses that the voltage clamping device 32 is a resistive jumper.

With respect to claims 7 and 17, Santurtun further discloses that the voltage clamping device 32 is formed of a resistive material.

With respect to claim 9, Santurtun further discloses that the voltage clamping device 32 is a voltage clamping device or a current clamping device (col.9, lines 28-34).

With respect to claim 12, Santurtun further discloses a driving circuit (29) and a cathode (not labeled, shown in tube 31, Fig.2) coupled to the driving circuit via the plurality of high voltage elements (electrical connections between elements).

With respect to claim 13, Santurtun further discloses a driving circuit (29) and a high voltage receptacle (not shown, where the cable attaches to the imaging tube) that is coupled to the driving circuit via the plurality of high voltage elements (electrical connections between elements).

With respect to claim 14, Santurtun further discloses that the plurality of high voltage elements exist within the imaging tube housing (cathode), the casing (circuitry 29) and the cable assembly (electrical connections between elements).

With respect to claim 15, Santurtun further discloses that the plurality of high voltage elements are a plurality of high voltage leads (leads that connect the voltage clamping device to tube 31 and driving circuit 29).

With respect to claim 16, Santurtun further discloses that the voltage clamping device allows current flow between the plurality of high voltage leads when a voltage potential between the leads is greater than a predetermined voltage level (col.3, lines 38-34).

Claim 19 is rejected under 35 U.S.C. 102(b) as being anticipated by Boyer (US 6,205,200 B1).

Boyer discloses a cathode circuit (Fig.7) having a plurality of high voltage elements having at least one discharge gap (G1 through G10) with a predetermined width, and discharging takes place across the gap when a voltage potential across the gap is greater than a predetermined voltage level.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Splain067.

Splain067 does not specifically disclose the material of which the varistor is made.

However, it is known to the skilled artisan to fashion a varistor out of a metal oxide as a common material suitable to the function of varistors.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Splain067 to form a varistor from metal oxides as is known in the art.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Santurtun.

Santurtun does not specifically disclose the material of which the varistor is made.

However, it is known to the skilled artisan to fashion a varistor out of a metal oxide as a common material suitable to the function of varistors.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Santurtun to form a varistor from metal oxides as is known in the art.

Allowable Subject Matter

Claim 20 is allowed.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record teaches an imaging tube with a cathode cup, a terminal board coupled to the cathode cup via a first set of high voltage elements, and a high voltage receptacle coupled to the terminal board via a second set of high voltage elements. However, the prior art neither teaches nor reasonably suggests that the above imaging tube additionally has a plurality of voltage clamping devices coupled to the first and second set of high voltage elements that prevent the occurrence of overvoltage transients across the first set and across the second set of high voltage elements, as required by the combination as claimed in claim 20.

Art Unit: 2882

Claims 5 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record neither teaches nor reasonably suggests the additional limitation that the voltage clamping device has a plurality of feedthrough holes, as required by claim 5.

The prior art of record neither teaches nor reasonably suggests the additional limitation that the voltage clamping device is a terminal board formed of a resistive or semi-resistive material, as required by claim 8.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Beland (US 5,495,165) teaches discharge modules and voltage clamping devices for various parts of imaging tube circuitry.

Cowell (US 4,408,247) and Boeker (US 3,320,477) teach the practice of using a voltage clamp to shut off the imaging tube in the event of voltage and/or current transients.

Daniels (US 4,322,625) teaches the practice of using leakage current circuitry having varistors transistors in imaging tube circuitry.

Albert (US 4,104,526) teaches an imaging tube with insulative elements between the high voltage leads between a cathode and a high voltage receptacle.


Setbon (US 4,402,086) teaches a control circuit for an imaging tube device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas R. Artman whose telephone number is (571) 272-2485. The examiner can normally be reached on 9am - 5:30pm Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Thomas R. Artman
Patent Examiner



EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER